already received by the recorders of the different sections. Indeed, one or two of the sections generally get more papers than is necessary to fill the time of the sittings. For example, Section A not only meets on Saturday, but is also on two days actually divided into two subsections. On Friday it is to be divided into (1) physics, and (2) astronomy. On Monday it is to be divided into (1) mathematics, and (2) meteorology.

At this early stage a full and definite programme of the different sections cannot be given. But the following brief provisional programme may be taken as conclusively indicating that the meeting promises to be a most successful one from an educational and scientific point of view.

Section A (Mathematical and Physical Science).—A large number of papers are already promised for this section. The following may be mentioned:—Five papers, dealing with elasticity, viscosity, magnetic fields, and stress and magnetisation of nickel and cobalt, are promised from the physical laboratory of the University of Glasgow by Prof. Gray, his assistants and the research students in his department. Dr. Larmor will give a paper on radiation, Dr. Hicks a paper on the Michelson-Morley effect and Dr. Glazebrook a paper on optical glass. In the meteorological department, Mr. W. N. Shaw and one of his assistants will give two papers treating of the seasonal variations of air temperature.

Section B (Chemistry).—The following papers have already been promised:—On the transitional forms between crystalloids and colloids, by Messrs. J. H. Gladstone and W. Hibbert; the oxidation of tin, including the action of light, by Messrs. J. H. Gladstone and G. Gladstone. Papers on the following subjects will also be submitted:—On the deposition of ocean salts, on electrochemical processes and on the manufacture of cyanides.

Section C (Geology).—Papers to this section are promised by Messrs. William Gunn, B. N. Peach, R. H. Traquair, Robert Kidston and H. B. Woodward. Several others have intimated a wish to read short papers on subjects in which they are specially interested.

Section G (Engineering).—A paper on the mechanical exhibits at the Glasgow International Exhibition is being arranged for. After a report on road traction is submitted by a committee appointed for the purpose, papers bearing on this subject will be read by Messrs. A. R. Sennett, A. H. Gibbings and Sir J. H. A. Macdonald. The following papers will also be given to this section:—Protection of buildings from lightning, by Mr. K. Hedges; dielectric hysteresis, by Mr. W. M. Mordey; Panama Canal, by Mr. M. Buon Varilla; tunnelling in quicksand, by Mr. M. A. Gobert; chain driving, by Mr. C. Garran; engraving machinery, by Mr. M. Barr; and aluminium as a fuel, by Sir W. C. Roberts-Austen. Mr. Barr will probably show his apparatus working in the municipal buildings during the evening of Thursday, September 12.

Section K (Botany).—There will be a discussion in this section on the teaching of botany, opened by Mr. Wager from the standpoint of botany teaching in schools, and by Prof. Bower from the point of view of University teaching. Profs. Ward, Scott-Elliott, Miall and others will take part in the discussion. It is intended to ask members of Section L, the educational section, to take a share in the discussion. Prof. Reynolds Green will probably give a semi-popular lecture on a botanical subject of general interest.

Section L (Educational Science).—After the president, Sir John E. Gorst, delivers his presidential address, it is expected there will be a discussion on Scottish educational systems. This discussion will probably be introduced by two papers, one by Mr. John Adams, on mechanism of education in Scotland, and the second by Dr. J. G. Kerr, on the training of the practical person.

On account of the International Exhibition there is a great influx of visitors to Glasgow, and members of the British Association who intend to be present at the Glasgow meeting are strongly recommended to make early arrangements for their rooms. The local committee have prepared a list of hotels and a preliminary list of lodgings and apartments. This list is ready to be sent to any inquirer.

MAGNUS MACLEAN.

NOTES.

PROF. A. W. RÜCKER, professor of physics at the Royal College of Science and secretary of the Royal Society, has been appointed principal of the University of London. We are informed that, in consequence of his appointment to this post, Prof. Rücker will resign the secretaryship of the Royal Society at the next anniversary meeting.

PROF. VIRCHOW's eightieth birthday will be celebrated in Berlin on Saturday, October 12, when he will personally receive delegates with congratulatory addresses from various scientific bodies, foreign as well as German. Prof. Waldeyer is the president of the executive committee.

THE Council of the Royal Society has awarded the Mackinnon studentship to Mr. J. J. R. Macleod, demonstrator of physiology in the London Hospital Medical College, for the purpose of enabling him to carry out researches in pathological chemistry. The studentship is founded under a bequest to the Royal Society by the late Sir William Mackinnon, Director-General of the Medical Department of the Army, for the foundation and endowment of prizes or scholarships for the special purpose of furthering natural and physical science, and of furthering original research and investigation in pathology. The studentship, for which fourteen applications were received, is of the annual value of 150*l*.

THE death is announced of Mr. J. Hamblin Smith, the well-known mathematical coach at Cambridge and author of numerous successful text-books of elementary mathematics. Mr. Smith was seventy-four years of age.

PROF. PASQUALE VILLARI has been elected president of the Reale Accademia dei Lincei, of Rome, in succession to the late Prof. Messedaglia.

AN excursion to the Auvergne district has been arranged by the Geologists' Association. The party will leave London on the evening of Thursday, August 15, and will journey to Clermont, which will be the centre of the excursions. The visit will last a fortnight, and an excellent programme has been arranged under the direction of Prof. Marcellin Boule, Prof. P. Glangeaud and M. J. Giraud.

A TELEGRAM from Ponta Delgada to the *Times* states that the International Meteorological Observatory in the Azores was inaugurated on July 10 by the King of Portugal. The Portuguese Prime Minister, the Minister of Marine, the civil governor of the islands and the different authorities, together with a number of Portuguese officers and the officers of the British cruisers *Australia* and *Severn*, were present at the ceremony.

WE are sorry to learn that the biological station which had been kept on Lake Baikal for a year by the East Siberian Geographical Society, at Goloustnaya, on the west coast, has been closed. A rich collection of fishes, especially of Cottus species, and a great variety of Gammarus species have, however, been secured, and the latter are in the hands of Prof. Sars, of Christiania.

ON Tuesday, July 16, a deputation of members of Parliament and engineering and shipbuilding societies waited upon Lord

Selborne (First Lord of the Admiralty) and Mr. Arnold-Forster (Parliamentary Secretary to the Admiralty), at Whitehall, to urge the necessity of improving the conditions of the service of engineers in the Royal Navy. Lord Selborne promised that the suggestions of the deputation would be carefully considered.

THE French Société d'Encouragement pour l'Industrie nationale announces the following awards of prizes:—Grand gold medal to the Chamber of Commerce of Lyons for the organisation of the commercial mission to China; 2000 francs to M. Horsin-Déon for his work on beetroot sugar; 500 francs to M. R. Fosse for his works on β-dinaphthol, and the same amount to M. Marcel Guichard for his works on molybdenum; 1000 francs to M. Triboudeau for his study of the Pas-de-Calais, and 1000 each to MM. Faure and Thénard for memoirs on the utilisation of waters in agriculture.

A REUTER telegram from St. Petersburg, dated July 11, says:—The St. Petersburg Academy of Sciences to-day received a telegram from the leader of the expedition which is shortly to bring to St. Petersburg the mammoth found in Siberia. The telegram, which is despatched from Yakutsk, reports that the expedition arrived at that place on June 14. It is proceeding by steamer up the river, and will then journey overland to Kolymsk, which is 3000 versts off, and where it expects to arrive in two-and-a-half months. The mammoth found is unique of its kind. Its hair, skin and flesh are entirely preserved, and there are remains of undigested food in its stomach.

AN interesting relic is reported by the *Times* to have been placed in the building of the Academy of Sciences at Tsarskoe-Selo. It is a large geographical globe, 11 ft. in diameter and made of copper. This globe was commenced in the year 1654 and completed ten years later during the reign of Duke Frederick of Holstein. The outside represents the earth, and the interior the celestial spheres of the world. There is a door giving access to the interior of this globe, and in the centre is a round table with space for twelve people to sit. By means of mechanism this great globe can be made to revolve upon its axis. The globe weighs about 3½ tons and was presented to the Academy of Sciences in 1725, but until now it has stood in the Zoological Museum at Tsarskoe-Selo.

THE executive committee of the National Physical Laboratory have made the following appointments:—Superintendent of the engineering department, Dr. T. E. Stanton; assistants in the physics department, Dr. J. A. Harker, Mr. A. Campbell and Dr. H. C. H. Carpenter; junior assistants, Mr. B. F. E. Keeling and Mr. F. E. Smith. It is expected that one or two more junior assistants will be appointed shortly. The alterations to Bushy House and the new buildings for the engineering laboratory are well advanced, and it is hoped to commence work early in October. Of the staff, Dr. Stanton, after serving an apprenticeship with an engineering firm in the Midlands, has had a distinguished career at Manchester and Liverpool, and is now professor of engineering at University College, Bristol. Dr. Harker and Mr. Campbell have both done work of real value in thermometry and electric measurements, while Dr. Carpenter, who will have charge of the chemical researches, after a successful course at Oxford has gained further experience at Leipzig, under Ostwald, and more recently at Owens College. Mr. Keeling obtained a double first in natural science and mechanical science, respectively, at Cambridge, while Mr. Smith was the most distinguished student of his year at South Kensington, and for two years has been one of Prof. Rücker's assistants.

THE programme has been issued of the meeting of the Iron and Steel Institute, to be held in Glasgow on September 3-6 in connection with Section V. of the International Engineering Congress. The remaining eight sections of the Congress will be under the charge of other institutions. The meetings will be held in the University buildings, which are in immediate proximity to the International Exhibition. The president will deliver a short address, and the following are among the subjects of papers:—The nomenclature of metallography; the presence of calcium in high-grade ferro-silicon; the spectra of flames at different periods during the basic Bessemer blow; iron and copper alloys; the correct treatment of steel; the profitable utilisation of power from blast-furnace gas; Brinell's method of determining hardness and other properties of iron and steel; internal strains in iron and their bearing upon fracture; and a mechanical gas producer.

A SATISFACTORY trial of a new airship, devised by M. Santos Dumont, took place at Paris early on Saturday morning. It may be remembered that M. Henry Deutsch has offered a prize of 100,000 francs (4000*l.*) to the inventor of a flying machine which would travel from the heights of Saint Cloud to and round the Eiffel Tower and back again to the starting point in half an hour. M. Santos Dumont did the journey in forty-one minutes on Saturday, that is to say he made a voyage of nearly ten miles at a speed of about fifteen miles an hour, though the return journey was against the wind. He did not win the prize, but his attempt is very encouraging, for he has shown that an airship can be made to travel at a high speed in any direction. His airship consists of a cigar-shaped balloon, six metres in diameter, thirty-four metres long, and having a volume of 550 cubic metres. The gas pressure is kept constant automatically by means of a ventilator driven by the engine and communicating with the balloon by means of a long canvas pipe. Suspended from the balloon is a light framework containing a petroleum motor of 16 horse-power, driving shaft, propeller and rudder, and near one end is a small wickerwork car in which the aëronaut stands and controls the steering-wheel and the apparatus for regulating the motor. M. Deutsch is constructing a similar balloon to that of M. Santos Dumont, but having a volume of 2000 cubic metres and a motor of sixty horse-power. M. Santos Dumont proposes to make another trial trip next Saturday. When going at full speed the propeller makes 200 revolutions per minute.

THE annual report of the Russian Geographical Society for 1900, which has only recently reached us, is, as usual, full of interest. It is especially interesting to notice the growing activity of the young branches of the Society at Vladivostok, Kiakhta, Tomsk and Orenburg—their work being not limited to pure geography, but being mainly directed to the exploration of the geology, botany, zoology and prehistoric anthropology of the respective regions. A new local museum has consequently been opened at Troitskosavsk, near Kiakhta, in addition to those of Minusinsk and Yeniseisk. The chief medal of the Geographical Society, the Constantine medal, was awarded this year to V. Obrucheff, the explorer of the Nan-shan and Mongolia, who has also explored very large portions of Transbaikalia and the Pacific littoral, and whose preliminary reports are always of the deepest interest for both the geologist and the orographer. The Count Lütke medal was awarded to M. E. Zhdanko for his extensive geodetical and hydrographical works in the far North, the Semenoff medal to J. A. Kersnovsky for work in meteorology, and the Prjevalski medal to the Tomsk professor, V. V. Sapozhnikoff, whose explorations of the Altai highlands revealed hundreds of unknown glaciers, as well as widely-spread traces of glaciation, and threw much new light on the geography of the whole region. These researches are now embodied in a work, "The Katuñ and its Sources" (with maps and a summary in French).

THE arrangements made for the meetings of the fifth International Congress of Zoology, to be held in Berlin on August

12–16, were described at the beginning of this year (January 3, p. 236), when the invitation circular was distributed. We are now informed that 114 papers have been proposed by zoologists of various nationalities, so that the Congress promises to be of real scientific importance. The magnificent rooms of the German House of Parliament have been put at the disposal of the Congress, and, with the exception of a few lectures to be delivered in the Chemical Institute of the University, all the meetings will be held in the Reichstag building. The sections of the Congress will be: I. General zoology; II. Vertebrata (biology, classification, distribution); III. Vertebrata (anatomy, histology, embryology); IV. Evertebrata except Arthropods; V. Arthropoda; VI. Economic zoology (fisheries, &c.); VII. Nomenclature. Zoologists who wish to read papers should send abstracts not exceeding fifteen lines of print to the Præsidium of the Congress not later than August 1. The complete papers must be sent in not later than October 1. The Congress will be opened at the Reichstagsbäude on Sunday, August 11, at 8 p.m. The subjects of lectures to be delivered in the course of the meeting are: the malarial problem from a zoological point of view, by Prof. G. B. Grassi; vitalism and mechanism, by Prof. Bütschli; theories of fertilisation, by Prof. Yves Délage; the psychological attributes of ants, by Prof. Forel; mimicry and natural selection, by Prof. E. B. Poulton; fossil remains of man, by Prof. Branco. Letters and applications for tickets should be addressed to the Präsidium des V. Internationalen Zoologen-Congresses, Berlin N. 4, Invalidenstrasse 43.

THE new pathological institute connected with the London Hospital Medical College was opened by Sir Henry Roscoe on July 10. The building has cost 20,000*l.*, the fitting-up will need another 1000*l.* and the carrying on of the department will cost about 1200*l.* a year. The director of the institute is Dr. Bullock. Mr. Sydney Holland, who occupied the chair at the opening ceremony, remarked that in the new laboratories studies of the causes of disease could be made under conditions which made success possible and advance probable. There would be an orderly continuity of observation which had hitherto been impossible and which would be carried on by men who were specially trained in that science and who loved it for its own sake and for its benefit to their fellow men. This was work by which the whole country would benefit, and yet they got no help from the Government. Scotch hospitals and Irish hospitals obtained grants from the Government, but English hospitals got none and were cramped in every direction for funds. Every German town, even small ones, had its pathological laboratories. The County Council had established one at Claybury, but the one they were opening was the first attempt in London to deal so completely with this most important branch of medical knowledge. In opening the building, Sir Henry Roscoe remarked that it was unique among the large hospitals of London. It was the most completely equipped department for dealing with pathology in a manner worthy of the importance of that branch of medical science. For it was now generally acknowledged that pathology was an essential portion of those studies which made up the great science of medicine. It was necessary to have a centre where pathology was studied for its own sake and not for purposes of immediate practical application, still less for mere examinational purposes. The institute would form, he trusted, an introductory stage for entrance to that still higher and more advanced school of research which had its home in he Jenner Institute at Chelsea.

AN unfortunate controversy having arisen on the question of priority in the proof of the mosquito theory of the transference of malarial infection, Major Ronald Ross has published some correspondence on the subject which shows that the claims of some of the Italian observers cannot be substantiated ("Letters from Rome on the New Discoveries in Malaria," 1900). These eight letters were written by Dr. Edmonston Charles, a resident in Rome, to Major Ross, then in India, and date from November 4, 1898, to January 14, 1899; a letter from Dr. Daniels is included, and they are preceded by a critical introduction, and terminate with a postscript and bibliography by Ross. At this period the Italians, notably Grassi, Bignami and Bastianelli, were endeavouring to follow Ross's investigations on the development of the malarial parasites in the mosquito, and Dr. Charles acted as an intermediary, informing Ross of the progress made by the Italians, and similarly communicating to the latter Ross's observations and handing them his specimens. In the first letter, Charles asks for specimens for Marchiafava "of the mosquito in which human malaria develops." Grassi now denies that Ross ever detected this species. It is pointed out how closely the Italians followed and how well informed they were of the details of Ross's work, yet now Grassi states that his labours were independent of Ross. In the third letter, with regard to the cultivation of crescents in the "dappled winged mosquito" by Ross, Charles says, "he (Grassi) seemed perfectly satisfied that your description referred to the *Anopheles claviger*." Grassi now contends that he could not identify the malaria-bearing mosquito from Ross's description. Bignami, Grassi and Bastianelli have frequently stated that Ross's first successful experiments with human malaria were unsound, because the insects employed might have already bitten another animal before having been fed on man. Yet in Ross's publication it is clearly premised that the insects had been bred in bottles from the larvæ. These and other claims are dealt with in this publication.

THE art of producing decorative illuminating effects by the use of electric light is one that has in recent years called forth the application of great engineering skill. Particular attention has been given to this point at the Pan-American exhibition now being held at Buffalo, and those who are fortunate enough to visit this exhibition will be able to admire what is probably the most comprehensive and carefully studied system of illumination that has as yet been carried out. The less fortunate can obtain some idea of the great beauty of some of the effects from the very excellent photographs that have been recently appearing in the *Electrical Review* of New York. Those responsible for the illumination at Buffalo were to a certain extent favoured by circumstances in that they had a cheap supply of electricity available from the neighbouring power station at Niagara. It was thus possible, not only to get current cheaply, but also to control the lighting of the whole exhibition from one centre. Power is transmitted from Niagara, 20 miles distant, at a pressure of 11,000 volts, and after undergoing a transformation down to an intermediate voltage of 1800 is again transformed down to the voltage for supplying the lamps. An additional effect is produced by gradually bringing up the lamps from darkness to full candle power instead of switching on the full light instantaneously. To carry this out the whole of the current used for illuminating the buildings is passed through three large water rheostats, consisting of iron tanks 10 feet long by 3 feet wide and 3 feet deep, into which cast-iron plates, 8 feet long by ¾ inch thick, are slowly lowered; when the plate reaches the bottom of the tank it strikes a clip which short circuits the rheostat. The three rheostats are worked simultaneously, the plates being lowered and raised by a small electric motor; 45 seconds is taken to light up the lamps, which are put out in a somewhat longer period of about 75 seconds.

THE director of the Belgian Meteorological Service has recently published a very useful memoir on the direction of the wind at Brussels, compiled from fifty years' observations (1842–1891). The work forms the third part of the series, those referring to barometric pressure and air temperature having already appeared. The wind-directions are grouped in various ways; among the tables we find the relative frequency arranged under sixteen points of the compass, for each month and for each season, during the fifty separate years deduced from the hourly or two-hourly indications of a self-recording anemometer. The plates containing the average monthly and yearly wind-roses show the prevailing directions more clearly than anything else could do. It is seen at a glance that the winds between south-west and west are more frequent than all the other directions combined.

SIGNOR G. ODDO, writing in the *Atti dei Lincei* on the use of oxychloride of phosphorus as a solvent in cryoscopic observations, finds that the cryoscopic constant of this solvent is 69, and that, like water, but within narrower limits, it ionises dilute saline solutions.

THE stability of a given state of motion is a subject on which much has been written and more remains to be written. A paper on certain criteria of instability, by Signor T. Levi-Cività, appears in the *Annali di matematica pura ed applicata.* After discussing the general theory, the author proceeds to consider the problem of three bodies, and shows in particular that periodical solutions approximating to uniform circular motions are unstable, a conclusion contrary to what would naturally be inferred from considerations of celestial mechanics. The same author, writing in the *Atti dei Lincei*, deals with the stationary motions of a rigid body in the case of Kowalevsky.

DR. F. CAUBET, of the University of Bordeaux, has published a lengthy thesis on the liquefaction of gaseous mixtures, dealing in particular with the phenomena of the critical point and of retrograde condensation. In it the author describes an elaborate series of experimental determinations of the isothermal lines, the lines of Gibbs and Konowaloff, and the dew- and boiling-points of three series of mixtures each formed of two of the three gases, methyl chloride, carbonic anhydride and sulphurous anhydride. By tracing the isothermals for different degrees of concentration, both in the homogeneous and in the heterogeneous states, Dr. Caubet hopes to throw experimental light on the theories derived from considerations of the thermodynamic potential.

AN account of the earthquake of April 24, in the neighbourhood of Palombara Sabina, is given by Dr. Luigi Palazzo in the *Atti dei Lincei*, x. 9. The shock was registered at the Central Meteorological Office at about 15h. 20m. 25s. Italian time, and lasted about five to six seconds. The town of Palombara was visited without delay by Prof. Cancani, who found that the damage in the centre of the town was small; but in the village of Stazzano four or five houses were destroyed, others rendered uninhabitable, while considerable damage was done at Cretone, and the author thinks it probable that the epicentre was at a sulphur spring about a kilometre distant from Cretone, and that the origin of the shock was in the strata from which the spring arises, at a comparatively small depth.

THE current number of the *Journal of Hygiene* contains, amongst other articles, an appreciative obituary notice of Prof. Max von Pettenkofer, accompanied by an excellent portrait. Pettenkofer's name is now so invariably associated with investigations in the department of hygiene that his earlier work in pure chemistry runs a risk of being overlooked. As long ago as 1850 he presented to the Bavarian Academy a paper calling attention to some of the main facts which form the basis of the periodic law of the elements, but, like Newlands in this country, his work obtained no recognition at the time, and it was only in 1899 that the German Chemical Society conferred upon him the Liebig medal in tardy recognition of the merit of his researches of nearly half a century before. It was largely due to Pettenkofer that Germany has now chairs of hygiene with magnificent laboratories in all but one of her twenty universities, besides the famous Imperial Institute of Public Health in Berlin.

IN their Report for the past year the council of the Leicester Literary and Philosophical Society announce that they are cooperating with the National Trust for the Preservation of Objects of Historical Interest or Natural Beauty, and that steps are being taken to register and protect such objects in the county as may come within the scope of the Society's aims. The *Transactions* (issued with the Report) contain a lecture on heredity and the question of the inheritance of acquired characters, by Mr. C. J. Bond. Dr. J. G. Adams, professor of pathology at McGill University, sends us a reprint from the *New York Medical Journal* for June of an address on the same subject, in which he proposes to supersede Weismann's and allied theories on heredity and inheritance by one of his own.

AN article on the fauna of the Antarctic ("La Faune du pôle Sud"), contributed by M. E. G. Racovitza to the *Revue Scientifique* for July 6, appears opportunely. It is based on the results of the recent Belgian expedition and contains a general account of the fauna, with special details of the habits of the penguins, and a few notes on the flora. Since the whole of the Antarctic land (both continent and islands) appears to be invested with an unbroken sheet of inland ice (miscalled *inlandsis*), the author does not hold out hopes of the discovery of any important new types of life in the interior.

TO the January issue of the *Journal* of the Straits branch of the Royal Asiatic Society, Mr. H. N. Ridley, director of the Botanical Gardens at Singapore, communicates an extremely interesting paper on the flora of Mount Ophir. This flora includes three factors, a lowland Malay element, specially modified for existence at a higher elevation, the usual Oriental alpine (or Himalayan) element and—what is most interesting and unexpected—an Australian element. The same journal also contains a list of the butterflies of Mount Penrissen, Sarawak, and one of the reptiles of Borneo, both by Mr. R. Shelford, curator of the Sarawak Museum.

MR. L. M. LAMBE has published a revision of the genera and species of Canadian Palæozoic Corals ("Contributions to Canadian Palæontology," vol. iv. part ii. Geol. Survey Canada, 1901). His work is illustrated by thirteen plates.

IN a brief article on Indiana caves, Dr. O. C. Farrington discusses some peculiar forms of stalactites and stalagmites (*Publications* of the Field Columbian Museum, vol. i. No. 8, geol. series, 1901). The shape of certain vermiform stalactites is attributed, with Merrill, to the fact that drops of water may have been guided to other positions than those dictated by gravity by the directions assumed by spicules of calcite in crystallising. In one huge stalagmite both aragonite and calcite occur, and its minimum age is reckoned at 90,000 years. Lining the walls of a pool in one of the caves are calcite crystals in close association with stalagmites; here the crystals were formed in relatively still water, while the stalactites and stalagmites were formed when the water was moving. The author suggests that in a general way banded structures may be taken as indicating formation from waters in motion, while distinct crystals were formed from waters at rest; and he would apply these principles to the origin of mineral veins, agates, geodes, &c. He proposes the term stagmalites for formations produced by dropping water, and to include stalactites and stalagmites.

THE *Transactions* of the "Antonio Alzate" Society of Mexico contain a paper by MM. Marroquin y Rivera and P. C. Sánchez on the mountain chain of the Ajusco and its subterranean waters. In the northern part of the Vallée de Mexico, which is a closed basin, are two lakes named Chalco and

Xochimilco, containing excellent water, but their level is so low that it could only be made available for supplying the city of Mexico by enormous expenditure for pumping machinery. The basin of these lakes is bounded on the south and east by the mountains of the Ajusco and Sierra Nevada, and on the north by the Santa Catarina; a depression to the north-east connects it with the Vallée de Mexico, of which it forms a part. The lakes are fed by springs draining the underground waters from the volcanic formations of the Sierra Nevada and the Ajusco. The paper, which is an interesting study of the physical geography of the region, gives a preliminary account of attempts to tap these underground waters at a suitable level for gravitational supply to Mexico. The impermeable bed, believed to be andesitic, is being sought for below the basalt lavas and detritus by means of borings.

THE technique of basketry as manufactured by the Amerinds is the subject of a very valuable little paper by Dr. Otis T. Mason in the *American Anthropologist* (n.s., vol. iii. p. 109). Those who have desired to describe baskets and other objects plaited by primitive peoples have long wanted a system upon which to base their studies. This Dr. Mason has supplied, and all who study primitive industries once more have to thank their diligent and systematic American colleague.

THE *Kew Bulletin of Miscellaneous Information* (Appendix iii. 1901) contains the usual annual list of new garden plants recorded during last year in botanical and horticultural publications. The list includes, not only plants brought into cultivation for the first time during 1900, but the most noteworthy of those which have been re-introduced after being lost from cultivation.

A SECOND edition of "Marine Boiler Management and Construction," by Mr. C. E. Stromeyer, has been published by Messrs. Longmans, Green and Co. The book is described in the sub-title as "a treatise on boiler troubles and repairs, corrosion, fuels and heat, on the properties of iron and steel, on boiler mechanics, workshop practices and boiler design"; it was reviewed in these columns when the first edition appeared (vol. xlix. p. 410). About sixty pages of new matter have been added, including a chapter on steam, water and the boiling phenomena. No detailed accounts are given concerning water-tube boilers, because little exact information about the various types is available.

THE additions to the Zoological Society's Gardens during the past week include a Sooty Mangabey (*Cercocebus fuliginosus*) from West Africa, presented by Mr. E. Robinson; a Diana Monkey (*Cercopithecus diana*) from West Africa, presented by Mr. L. Gough; a Northern Mocking-bird (*Mimus polyglottis*) from North America, a Common Chameleon (*Chamaeleon vulgaris*) from North Africa, a Green Lizard (*Lacerta viridis*), European, presented by Miss Betty Cox; two Chaplain Crows (*Corvus capellanus*) from the Persian Gulf, presented by Mr. B. T. Ffinch; two Olive Weaver-birds (*Hyphantornis capensis*), two Alario Sparrows (*Passer alario*), eight Sulphury Seed-eaters (*Crithagra sulphurata*) from South Africa, presented by Mrs. R. Templeman; a Jackdaw (*Corvus monedula*), British, presented by Mr. L. Peevor; a Green Monkey (*Cercopithecus callitrichus*), a Jardine's Parrot (*Paeocephalus gulielmi*) from West Africa, a Pine Marten (*Mustela martes*), British; three King Snakes (*Coronella getula*), two Mexican Snakes (*Coluber melanoleucus*), a Chained Snake (*Coluber catenifer*), two Corn Snakes (*Coluber guttatus*), two Chicken Snakes (*Coluber obsoletus*), three Testaceous Snakes (*Zamenis flagelliformis*), a Long-nosed Snake (*Heterodon nasica*), an Amphiuma (*Amphiuma means*), three Menopomas (*Cryptobranchus alleghaniensis*), two Menobranchs (*Necturus maculatus*) from North America, deposited; two Barbary Wild Sheep (*Ovis tragelaphus*), a Japanese Deer (*Cervus sika*), a Yak (*Poephagus grunniens*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

WAVE-LENGTH OF GREEN CORONA LINE.—In the *Mem. della Soc. Degli. Spett. Ital.* (vol. xxx. pp. 124–128), Sig. Ascarza describes the results of observations made at Plascencia by the party from the Madrid Observatory during the total eclipse of the sun on May 27, 1900.

The instrumental equipment consisted of a Grubb coelostat with a mirror 20 centimetres diameter, furnishing light for a Steinheil objective of 12 centimetres aperture and 1·80 metres focus. This produced on the slit of the spectroscope an image of the sun about 16 millimetres in diameter.

A Dubosq spectroscope was used, furnished with six prisms and eyepiece micrometer reading to 1 : 300th of a millimetre. On account of the absorption of the prisms, only *three* were used for the final observations.

For the determination, measures were made on the lines 5328·696, 5270, 108 (E), and 5183·792 (b_1), and the resulting measures of the corona line reduced by interpolation formulæ. The spectroscope not being sufficiently powerful to separate the components of E, the mean of the wave-lengths of the two was adopted.

Preparation was made for both radial and tangential measures, but on account of the diffuse character of the line the tangential method was applied. The results were reduced by two interpolation formulæ, Gibbs and Hartmann, slightly varying values being obtained. The wave-lengths found on Rowland's scale were 5298·7 and 5298·818 respectively. The paper concludes with a note stating the difference of 4 tenth-metres between this value and that of 5303 obtained by Lockyer and Campbell from photographs taken during the total solar eclipse in India on January 22, 1898.

DEFORMATION OF THE SUN'S DISC.—In the *Mem. della Soc. Degli. Spett. Ital.* (vol. xxx. pp. 96–110), Sig. A. Ricco describes a long series of observations, both visual and photographic, of the varying deformations of the disc of the sun by the effect of atmospheric refraction, made at the observatories of Palermo and Catania (Etna). Many of the visual observations were made with a small Ramsden telescope having a terrestrial eyepiece, magnifying five times; photographs were also taken with a Merz telescope of 0·115 metre aperture and 1·93 metres focal length, adjusted to the chemical focus, giving an image about 0·0175 metre diameter.

The paper is illustrated by drawings and reproductions from many of the photographs, which are similar in many respects to those obtained by Colton at the Lick Observatory and published about 1895.

THE MINOR PLANET TERCIDINA.—In the note on p. 265, Prof. Hartmann's observations were misinterpreted. The photographs obtained at the Potsdam Observatory do not confirm the suspected variability suggested by the photograph obtained by Prof. Wolf in November 1899, nor do the later photographs of Prof. Wolf. The apparent variation may possibly be due to instrumental irregularities.

THE TOTAL ECLIPSE OF MAY 18, 1901.

THE following account of the total eclipse of the sun, May 18, is taken from a letter received from Mr. J. Cresswell, who was formerly a student of astronomical physics at the Royal College of Science, and is now engaged at a mining camp near the centre of Borneo (lat. 0° 45′ S., long. 113° E.).

The eclipse commenced about 12.20 in a cloudy sky, but fortunately about 15 minutes before totality the whole sky cleared and revealed a crescent sun. There were only one or two small clouds near the horizon, and the landscape appeared to have a peculiar violet tinge. There was no fall in temperature up to this point, the thermometer having remained stationary at 34°·75 C. Four minutes afterwards the landscape appeared as if seen through smoked glass, the temperature now being 34°·5. After the lapse of another 8 minutes the light was like that when a heavy storm is gathering, and shadows had a peculiar transparency; a number of stars appeared in the heavens distant from the sun. After 2½ minutes more had elapsed, second contact occurred and we were in darkness. The accompanying sketch of the corona was made and a photograph was taken with a small camera. The darkness was such that a small